

Claims

- [c1] 1. An electrical generator for an internal combustion engine having an engine shaft, said generator being comprised of a hub portion adapted to be affixed for rotation with the engine shaft, a rotor portion integrally formed with said hub portion and having a first, integral cylindrical portion extending in one axial direction therefrom for carrying a plurality of circumferentially spaced permanent magnets for cooperation with a stator, and a second, integral cylindrical portion extending in an axial direction opposite to said one axial direction for forming a race for a one way clutch for rotatably coupling a starter gear to the engine shaft.
- [c2] 2. An electrical generator as set forth in claim 1 wherein the surface of one of the integral cylindrical portion is hardened.
- [c3] 3. An electrical generator as set forth in claim 1 wherein the hub portion has radially extending flange from which the cylindrical portions extend.
- [c4] 4. An electrical generator as set forth in claim 3 wherein the cylindrical portions are radially spaced from each

other.

- [c5] 5. An electrical generator as set forth in claim 4 wherein the radially extending flange from which the cylindrical portions extend has a step dividing it into radially inner and outer portions.
- [c6] 6. An electrical generator as set forth in claim 5 wherein the surface of one of the integral cylindrical portion is hardened.
- [c7] 7. An electrical generator as set forth in claim 6 wherein the surface of the second, integral cylindrical portion forming the race is hardened.
- [c8] 8. An electrical generator as set forth in claim 7 wherein the surface of the radially extending flange from which the second, integral cylindrical portion extends is also hardened.
- [c9] 9. An electrical generator as set forth in claim 8 wherein a fillet is formed at the juncture of the hardened surfaces.
- [c10] 10. An electrical generator as set forth in claim 9 wherein the surface of the fillet is also hardened.
- [c11] 11. An electrical generator as set forth in claim 1 further including permanent magnets affixed to the first, inte-

gral cylindrical portion and a one way clutch cooperating with the second, integral cylindrical portion, the hub portion being fixed for rotation with an engine shaft.

[c12] 12. An electrical generator as set forth in claim 11 further including a starter gear journaled on the engine shaft and coupled thereto by the one way clutch.

[c13] 13. An electrical generator as set forth in claim 12 wherein the hub portion has radially extending flange from which the cylindrical portions extend.

[c14] 14. An electrical generator as set forth in claim 13 wherein the cylindrical portions are radially spaced from each other.

[c15] 15. An electrical generator as set forth in claim 14 wherein the radially extending flange from which the cylindrical portions extend has a step dividing it into radially inner and outer portions.

[c16] 16. An electrical generator as set forth in claim 15 wherein the surface of one of the integral cylindrical portion is hardened.

[c17] 17. An electrical generator as set forth in claim 16 wherein the surface of the second, integral cylindrical portion forming the race is hardened.

- [c18] 18. An electrical generator as set forth in claim 17 wherein the surface of the radially extending flange from which the second, integral cylindrical portion extends is also hardened.
- [c19] 19. An electrical generator as set forth in claim 18 wherein a fillet is formed at the juncture of the hardened surfaces.
- [c20] 20. An electrical generator as set forth in claim 19 wherein the surface of the fillet is also hardened.